"Look Ma, No Hands!"
Driverless Vehicles are Here

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The Command College Futures Study Project is a FUTURES study of a particular emerging issue of relevance to law enforcement. Its purpose is NOT to predict the future; rather, to project a variety of possible scenarios useful for strategic planning in anticipation of the emerging landscape facing policing organizations.

This journal article was created using the futures forecasting process of Command College and its outcomes. Defining the future differs from analyzing the past, because it has not yet happened. In this article, methodologies have been used to discern useful alternatives to enhance the success of planners and leaders in their response to a range of possible future environments.

Managing the future means influencing it—creating, constraining and adapting to emerging trends and events in a way that optimizes the opportunities and minimizes the threats of relevance to the profession.

The views and conclusions expressed in the Command College Futures Project and journal article are those of the author, and are not necessarily those of the CA Commission on Peace Officer Standards and Training (POST).

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"Attention units, a 211 just occurred at the Bank of America on N. Broadway and Acacia, suspect is a white male last seen riding a brown horse west on Acacia." Now before you turn back to the cover of the magazine to see what year your magazine is from this is actually a scenario from the future, a future with driverless vehicles. Take a moment to think about a future where vehicles no longer need a driver, ones that can be controlled by traffic signals, and law enforcement making the vehicle useless to use when committing a crime. The 30,000 lives lost each year on our nation's highways due to accidents would be a thing of the past as would the evils of drunk driving since computers never get tired, distracted, or impaired. The elderly who cannot drive anymore would regain their freedom, as would those drivers whose bad habits take away their privilege to use a vehicle. This future is closer than most people realize.

We currently can purchase vehicles with collision avoidance technology, cruise control, hazard warning systems when backing, and ones that can park themselves. We also are able to add GPS and Bluetooth technology to these vehicles so combining all this technology; we are not far from having a vehicle that can drive itself. As we discovered with anti-lock brakes, computers can think and react far faster than we can as humans, so it stands to reason that a computerized vehicles will be far safer than those driven by humans.

Vehicles in the near future will be able to sense when a hazard is to close by using radar, and adjust their speeds accordingly. They can use GPS to calculate the fastest route to a location, and factor in such things as traffic congestion and the time of the day

when the trip will be taken. Taking this one step further these vehicles will be able to link by computer with each other forming a convoy that can travel much faster, and safer than we currently are able too. When a vehicle stalls, the computers will talk to each other to re-route traffic around the problem, reducing traffic congestion and greatly improving commute times. Someone who has a medical problem while inside the vehicle can either be automatically routed to the nearest hospital or linked to a paramedic unit to meet halfway, greatly reducing the time before treatment starts; all done with the onboard computers. This all sounds great but really, how far away are we from this being reality?

Technology and Timeline

Larry Burns, GM's vice president stated back in 2008 that the company plans to test driverless car technology by 2015 and have the cars on the road by 2018 for the general public to use. This may have been a tad pessimistic on his part as Google has had eight driverless vehicles buzzing around Bay Area streets for two years. In 2010 a driverless Audi TTS conquered Pikes Peak's 12.42 miles of winding roads in 27 minutes, just 10 minutes longer than one controlled by a driver; and Italian engineers had a driverless van complete an 8,000 mile trek from Italy to China without any major problems.

Despite their high tech equipment, driverless vehicles still have problems handling inclement weather and humans driving unpredictably; so these cars are not ready for public consumption just yet. This brings up one of the challenges with this new technology and that is blending the old with the new; vehicles controlled by humans driving on the same roadways travelled by driverless vehicles. This is possible on a small scale as Google has shown, but to start with, lanes will probably be designated for each

type of vehicle until the transition is complete. Jim Hall (2011), principal of 2953 Analytics and frequent Jurist on Motor Trend's Car of the Year panel believes that autonomous cars will hit the streets before the decade is out, arriving first as taxicabs, because the savings of not hiring a driver can offset the cost of technology (picture Johnny Cab in the movie Total Recall). He believes that eventually only sports cars will be left for the driving enthusiasts as a novelty item, going to a similar fate of horses now only owned for sport.

Speaking of horses, this change will not be unlike the change law enforcement felt as people moved away from horseback to cars as their primary transportation. The faint whistle of a train can be heard off in the distance to warn those of us in law enforcement that we can either plan for this radical change or get run over by it when it arrives, but arrive it will.

Driverless Technology's Impact on Police Work

Police officers are notorious for trying to multi-task enroute to a call. They look at the computer screen, answering the radio, perhaps running a plate or address for history, and have a cell phone conversation while trying to drive. Now with the coming of driverless vehicles, multi-tasking will be much easier and safer as the patrol car takes the fastest route to the call without the officer even having to look at a map. Vehicles will automatically pull over for emergency vehicles allowing response times to be reduced and could be automatically re-routed around accidents and other hazards. Law enforcement will be able to use this technology to control, and in some cases, shutdown vehicles. Vehicles will no longer be used to escape crime scenes, and vehicle pursuits will be eliminated. Computers think and react far faster than humans so accidents will be

a thing of the past, which will save officer's lives and thousands of dollars in claims cities have to pay out in litigation due to officer involved accidents. Traffic enforcement will no longer be needed as the vehicles will be controlled by signals and signs allowing departments to use those resources in other areas or downsize.

Now that traffic enforcement is no longer needed, revenue generated by the police department through traffic citations, towing of vehicles and drunk driving arrests will dry up, and the loss of revenue from enforcement and grants for traffic safety could be crippling to a municipal police agency. There will be savings realized on the reduction of fleet accidents, vehicles lasting longer and savings on gas as these vehicles will drive more efficiently. This will also allow Chiefs to redeploy those resources once dedicated to traffic enforcement, into others areas such as gang or narcotic enforcement, delivering a higher level of service in these areas and department wide.

Lawsuits that result from pursuits and other vehicle related incidents will be eliminated in most cases, and barring a major technology malfunction, the department's liability and insurance needs should drop dramatically producing additional savings. This technology will allow patrol to do more with less, which will result in fewer officers needed. This technology has the potential to significantly impact the budget and the shape of the department.

Our State's current budget crisis could be solved as Highway Patrol and the Department of Motor Vehicles could be downscaled dramatically. This new found money could then be redirected to prison rehabilitation and education, which have taken severe budget cuts and have a direct impact on the society we live in. On a large scale, a state's highway patrol will become almost obsolete; but on a smaller scale, departments

will no longer need a traffic unit. Now before the "leather gods" start to panic and check their latest PERS statement to see when they can retire, the transition to these vehicles will not be an overnight process. There are many hurdles culturally, legally, and structurally that have to be overcome before a majority of our cars are driverless.

Cultural Resistance

There will be some consternation with any new technology that might curb a freedom that people currently enjoy, such as losing control of your own vehicle and giving that control to the government. By government control, we are not saying the government needs to own the vehicles but just the right to control them at times. These times would be intersections controlled by traffic signals, getting on the freeway or yielding for emergency vehicles. Is the public willing to give up some control of their vehicles for increased safety and the saving of human lives? Will the public accept the idea that they can be tracked at all times while they are in their vehicles?

An expert panel convened to study this issue felt the resistance would be significant at first, as people cling to their freedom to drive and the ability to travel when and where they choose. However, they also felt that the convenience, and society's acceptance of this new technology will evolve to become the norm and this past freedom will be forgotten. With this new found power, the government also takes on additional liability if something goes wrong. What happens if something malfunctions causing a multi-vehicle accident and results in loss of human life, while patrol is responding to a call or because the city's traffic signals malfunction? This will all have to be played out in the courts and legislative branches of government before driverless vehicles are the primary form of transportation.

Legislative Road Blocks

Recently, the State of Nevada took a step to enable the use of driverless vehicles with the passage of their Assembly Bill 511. This new law allows a person to obtain an endorsement on their driver's license recognizing the fact that they can use a driverless motor vehicle on Nevada roads. This legislation is the first of its kind in the Nation; it was specifically requested by Google so they could operate their satellite-mapping vehicles in Nevada. Ironically, this legislation revolved around an endorsement on a driver's license, but will we actually need driver's licenses in a future with driverless vehicles? If vehicles are truly 100% driverless then it would be similar to taking a taxi at present, where a driver's license is not required from the passenger.

Future legislation regarding driverless vehicles may also revolve around privacy issues and government's right to control the public's travel. Normally, legislation can be a slow process, but if this technology was shown to save thousands of lives major groups such as MADD will push for this legislation to be passed quickly. Not everyone will be excited about this technology, and some will do anything in their power to slow it down. Truck drivers, bus drivers and taxi drivers (just to name a few) could be looking for another way to make a living. Trucking companies in particular, though, can profit from this technology. They could just load a truck up and then program it to deliver to a certain address; eliminating the high cost of drivers. The technology would essentially be the same on big cargo trucks as passenger vehicles as the computers would be communicating with each other through the delivery, regardless of the size or type of vehicle. The possible costs, revenue streams and income from industries as diverse as the insurance industry to the auto makes themselves could be dramatically affected. It is

quite possible affected groups would attempt to use their influence with legislators to try and slow this progress down

Randal O'Toole (2010), Urban Land Expert with the CATO Institute, suggests that driverless vehicles will outrun high-speed rail and truly is the future of transportation as driverless vehicles will be able to put more than three times the number of cars at faster speeds than currently allowed. He goes onto state that the government is the biggest obstacle, as they would prefer to push high-speed, taxpayer-subsidized trains on us. He too believes that driverless vehicles will be the norm by 2018, since you can currently buy one that is 90% driverless. It will, though, still be a tough pill for government to swallow after investing millions in a high-speed rail.

Infrastructure Changes

Changes to our infrastructure would have to occur before we could become completely driverless, and these changes will cost a lot of money in a country that is struggling with debt. Traffic signals will have to be installed to control the flow of traffic, costing cities and states millions of dollars. Lanes will have to be designated at first for driverless vehicles; later when they become the norm, lanes will have to be designated for those vehicles requiring a driver. There are also issues with vehicle travel coming from Canada and Mexico, where the driverless may not be as much in use, or conversely, taking a driverless vehicle to another country. The technology maybe so advanced in the future that these may not be issues at all. Without being able to predict certain issues, though, these are current hurdles that stand in the way of bringing driverless vehicles to the public.

Conclusion

Those of us with a few years left in law enforcement will see the huge change that driverless vehicles will bring. The technology is here and just needs to be pieced together. The question is, are we in law enforcement ready for the impact this technology will have? This change will truly have repercussions in law enforcement nationwide. A department budget and size will change, as will the day to day patrol operations due to this technology. In many ways, this will be a great time to be in law enforcement as going to a heart breaking fatal accident will be a thing of the past; mounds of paperwork will be a thing of the past, and court time that a DUI case takes will be a thing of the past. I am sure the first time we respond to a call reading our notes, running a premise history and taking a last sip of coffee without ever looking up at traffic, we'll begin to get a sense of what those law enforcement officers felt when they traded in their horse for something with an engine and four wheels. Just as we get comfortable with this future of driverless vehicles, two words will start hitting the news, "flying cars."

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